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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/596,653

06/20/2006

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OGOSH56USA

8832

270 7590 04/09/2009  
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EXAMINER

BAND, MICHAEL A

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/596,653	<b>Applicant(s)</b> OKABE ET AL.	
	<b>Examiner</b> MICHAEL BAND	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 7-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 7-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/20/2006; 6/21/2006</u> .                                    | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2 and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al (US Patent No. 6,619,537) in view of Fukuda (JP No. 03079734) and Bolcavage et al (US Patent No. 6,579,431).

With respect to claims 1-2, Zhang et al discloses a sputter target assembly including a high purity copper sputter target diffusion bonded to a backing plate of a copper alloy and an interlayer composed of Ni-Cr and Ni-Si (abstract). The interlayer is included as the backing plate since said interlayer is interdiffused to the backing plate (col. 4, lines 54-58). However Zhang et al is limited in that specific weight percentages Si are not suggested.

Fukada teaches a copper alloy for a backing plate, where the copper alloy comprises 0.05 to 0.8% Cr and 0.01 to 0.3% Si (abstract). Fukada cites the advantages of the specified weight percentages as reducing deformation due to thermal strains, permit repeated use, and improving the heat conductivity (abstract).

It would have been obvious to one of ordinary skill in the art to use the specified copper alloy weight percentages taught by Fukada for the copper alloy backing plate of Zhang et al to gain the advantages of reducing deformation due to thermal strains, permit repeated use, and improving the heat conductivity.

Art Unit: 1795

However Zhang et al is further limited in that a specific weight percentage of Ni is not suggested.

Bolcavage et al teaches diffusion bonding of high purity metals and metal alloys of copper targets and copper backing plates using nickel or nickel alloy interlayers (abstract; col. 3, lines 18-36), where said Ni alloy is Ni 1% with Cr (col. 7, lines 44-56). It has been held that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. See MPEP 2144.05, Section I. Bolcavage et al cites the advantage of this Ni percentage as providing a copper target/backing plate assembly that can withstand prolonged high power sputter usage periods without significant target/backing plate debonding (col. 3, lines 18-23).

It would have been obvious to one of ordinary skill in the art to use approximately 1% Ni for the backing plate material as taught by Bolcavage et al for the Ni alloy of Zhang et al to gain the advantage providing a copper target/backing plate assembly that can withstand prolonged high power sputter usage periods without significant target/backing plate debonding.

With respect to claims 7 and 10, modified Zhang et al further discloses a copper alloy having similar weight percentages of Cr, Ni, and Si as discussed above. Therefore it is expected that the copper alloy backing plate possesses the properties of an electrical conductivity of 35 to 60% and 0.2% proof stress of 400 to 850 MPa.

With respect to claims 8-9 and 11-14, modified Zhang et al further discloses using a hot isostatic pressing (HIPing) method to use diffusion bonding of the target and backing plate (col. 5, lines 4-9), where the diffusion bonding is at a temperature of about 350°C (col. 5, lines 51-59).

***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent Nos. 6,521,108; 6,774,339; 6,793,124; 6,849,139; 7,431,195.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 9am-5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795